**Abstract of the Disclosure**

Traffic measurement should make it possible to obtain the spatial flow of traffic through the domain, i.e., the paths or trajectories followed by packets between any ingress and egress point of the domain. A method of sampling packet trajectories in a packet switching network allows the direct inference of traffic flows through a measurement

5   domain by observing the trajectories of a subset of all packets traversing the network. A method which assumes that the measurement domain does not change comprises the steps of selecting packets for sampling in accordance with a sampling function of the packet content and generating a practically unique label for each sampled packet. The method does not rely on routing state, its implementation cost is small, and the measurement

10   reporting traffic is modest and can be controlled precisely. Using the same hash function will yield the same sample set of packets in the entire domain, and enables us to reconstruct packet trajectories. An alternate embodiment which assumes no constraints and that the measurement domain may change comprises the steps of applying a sampling function and altering an invariant bit position as a signaling flag in each packet selected

15   for sampling.